

Abstract Submitted  
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**Turbulent Signatures in the Optical Spectra of Self-Induced Stark Lines in Hypersonic Argon and Krypton Plasma**<sup>1</sup> KYRON WILLIAMS, JAMES TITUS, ALONZO ALEXANDER, MARQUITA SCOTT, JOSEPH JOHNSON III, Florida A&M University — Recent experimental evidence suggests that turbulence is influenced by external electromagnetic fields. Localized magnetic fields might also distort turbulent systems. High-speed optical spectral scans in the arc driven shock tube confirm the presence of self-induced Stark Effect lines in argon and krypton plasmas. Analyses of the plasma turbulence in these lines indicates a sensitivity of the spectral index, the characteristic frequency, and turbulent energy to local field strength. Comparison of data in both the primary and reflected shock regions shows consistent behavior of the turbulent parameters as a function of field strength. In addition, the system complexity versus magnetic field also displays a constant behavior with increasing magnetic field. We discuss these results in the context of new turbulent astrophysics and fusion science.

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